

# NAEB

## TV Engineering Newsletter

NATIONAL ASSOCIATION OF EDUCATIONAL BROADCASTERS

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Urbana, Illinois

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### NAEB ENGINEERING NEWSLETTER No.6

July 1956

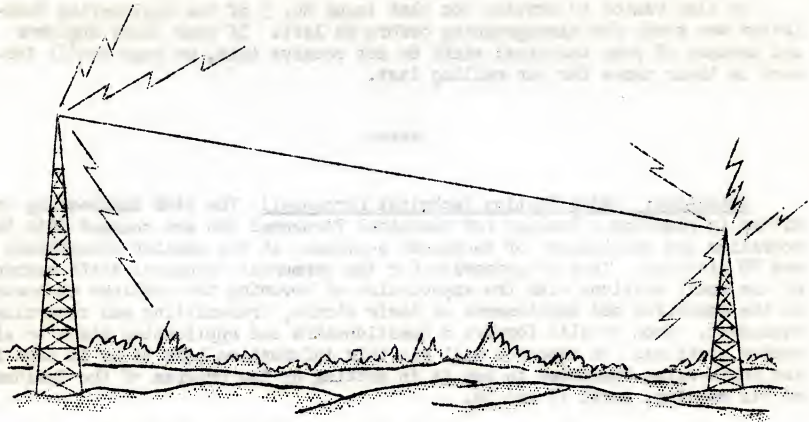
| Table of Contents                                     | Page |
|-------------------------------------------------------|------|
| TV Technical Tips No. 19                              | 1    |
| TV Technical Tips No. 20                              | 4    |
| TV Technical Tips No. 21                              | 9    |
| Winners of Radio and Audio Engineering Seminar Grants | 13   |

We'd like to call the attention of our readers to the fact that the Technical Tips columns above are those from the regular monthly NAEB Newsletter. Occasionally we refer to other items that month giving a page reference. Obviously this does not refer to the page numbers of the Engineering Newsletter. This has caused some confusion to our readers, but we hope this explanation will clarify matters.

We refer to a report on the Ampex Video Tape Recorder which is not included in this mailing. This report is available upon request. We also refer to a list of those attending the Radio and Audio Engineering Seminar which we are including.

We had hoped to include other articles of interest in this issue, however other work has priority. Since this should have gone to press a month ago, so we'll include them in the next newsletter. We urge our readers to contribute to these columns. We need articles of interest to all technical personnel. Perhaps your ideas, if published here, will save a fellow engineer much time and trouble in solving the same problem.

Cecil S. Bidlack  
July 13, 1956



TV Technical Tips No. 19  
by  
Cecil S. Bidlack, NAEB TV Engineer

This column is being written in New York far from our usual base of operations and near the end of a 17-day trip. We know we're perilously near the deadline for copy for the April Newsletter and hope this reaches Headquarters in time to be included. Before leaving Urbana we had a number of things noted to include in this column. We hope our memory is good for the list we need is safely filed in our desk back home.

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First we want to mention that before we left Urbana, technical details and a schematic of the WOI-TV Gray Scale Generator were mimeographed and mailed to all our educational TV stations and those closed-circuit studios we had listed with kinescope recorders. We feel sure that our list is not complete so we'd be more than happy to fill a request from anyone we missed who wants this information. We believe a gray scale generator is almost a must for kinescope operators, and if you don't have \$1,750.00 to buy one, this one of Keith Ketcham's may be very useful to you.

Talked to Fred Remley of the University of Michigan at the IRE Convention and he shares the above opinion. He also added that they improved the stability of operation of their WICKES Linearity Checker (gray scale generator) by regulating the AC power input to this equipment.

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We also wanted to mention too that Issue No. 5 of the Engineering Newsletter was ready for mimeographing before we left. If your Chief Engineer and members of your technical staff do not receive this, we hope you'll forward us their names for our mailing list.

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Attention: Radio Station Technical Personnel! The NAEB Engineering Committee is planning a Seminar for Technical Personnel who are charged with the operation and maintenance of technical equipment at the smaller educational AM and FM stations. This is primarily for the permanent technical staff members of the small stations with the expectation of covering the problems encountered in the operation and maintenance of their studio, transmitting and recording equipment. Soon we will forward a questionnaire and application blank to all member stations. We hope you will get this information back to us in time for the Engineering Committee to use it in setting up the program of the Seminar at its meeting, April 15 and 16.

It is expected that this proposed seminar will receive NAEB Board approval and that sufficient funds will be available to pay all travel and living expenses of those attending. This should be a fine experience for those selected to attend. It will enable them to get acquainted with other NAEB engineers, and we hope it will provide the solution to many of their technical problems as well as improve the quality of their transmitted signal.

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Now for a brief run down on the trip mentioned in our opening paragraph. We left Champaign-Urbana Sunday morning, March 11, arriving in Columbus that evening for the NAEB Consultation Team Visit (see story on page 2) at WOSU-TV March 12, 13, and 14. After the visit, we left Columbus Wednesday afternoon only a few minutes late for a flight to Boston via Cleveland. We mention only slightly late since Armand Hunter's and Ed Stasheff's plane to Detroit and East Lansing was four hours late leaving Miami. We were delayed an hour (leaving Cleveland) and then almost made up most of this time en route to Boston thanks to a 90 m.p.h. tail wind.

We spent Thursday (15) and Friday (16) at Boston University, with Dr. Leo Martin, Jim Bonney, Ted Nelson and Milan Barnes going over plans for their proposed radio and television studios. We also visited the building where the proposed studios are to be located, covering the entire building from roof to basement in an endeavor to determine the most advantageous location which could be adapted for radio and television.

We were there to experience first hand the "Blizzard of 1956" which so effectively tied things up in Boston and New England. However we managed by

subway and train to get to Lowell Friday evening to enable us to get acquainted over the weekend with our second granddaughter.

Monday (19) we were on an early train from Boston to New York, early enough to see the beginning of the second snow storm which deposited another foot of snow in the Boston area. We arrived in New York City 90 minutes late to find traffic at a standstill due to a 12.5 inch snowfall on Sunday. Taxis were few and very far between, and hotels were jammed but the busses were still running. Advance hotel reservations meant only good intentions however. Another bus landed us in a hotel with rooms available although not so conveniently located.

In spite of the storm and the gigantic transportation problem it caused, the annual Institute of Radio Engineers Convention was well attended, so well in fact that many were turned away at some of the more popular technical sessions. We were pleased to see Fred Remley, Chief Television Engineer of the University of Michigan, George Murphy, Chief Engineer of the Auburn Studio of the Alabama State Network, and Ralph Townsley of WBAA at Purdue University in attendance. We feel that educational radio and television should be represented at such meetings and hope that in future meetings our participation will increase.

Thursday afternoon and Friday we spent in Brooklyn at the Board of Education Station WNYE. Herman Haverkamp, WNYE Chief Engineer, was busy going over space requirements for new television facilities which we discussed in detail. Jim Macandrew sat in with us for a few minutes in discussing their plans. We also had a lengthy session with Ed Kratt of the NABE Engineering Committee and Herb Friedman of the WNYE staff on tape recorders, their characteristics and maintenance routines.

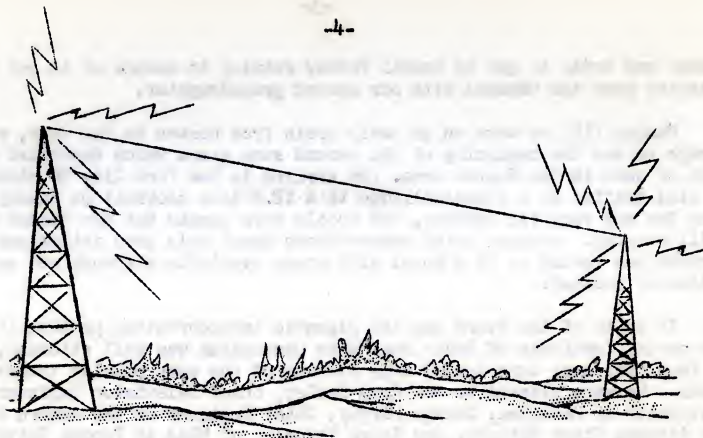
We'll report later on the remainder of the trip. We'll put this in the mail with the hope that it will beat us home by a day and make the deadline for the April Newsletter.

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We have available the procedures used by WOI-TV, Channel 5, and WILL-TV, Channel 12 in making harmonic measurements on their television transmitters. In both cases, the method is essentially the same as that set forth in the General Radio Experimenter Vol. XXIX, No. 10, March, 1955. We are not planning to publish these in the Engineering Newsletter since they are not of general interest, however, we will be glad to make copies for those who request them.

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A sample log form for kinescope recorder operations was included in Issue No. 5 of the Engineering Newsletter. We'd be glad to send you a copy upon request.



TV Technical Tips No. 20  
by  
Cecil S. Bidlack, NAB TV Engineer

Biggest television news of the past month was made by the Ampex Corporation which demonstrated its new Video Tape Recorder in Chicago at the NARTB Convention. Ampex unveiled this latest development in video recorders April 14 when it demonstrated its new and revolutionary process to over 200 CBS-TV affiliates. CBS-TV has ordered three prototype units at a cost of \$75,000 each which it plans to use this fall to overcome the three hour time differential between the East and West Coasts.

This new video recorder was demonstrated all week during the NARTB Convention. The tape itself is two inches wide and moves at a speed of only 15 inches per second. An hour's television program, both sound and picture, can be recorded on a 14 inch reel of tape with no processing involved. The tape can be re-wound and played back immediately. It records frequencies as high as 4 mc. to give 320 line resolution. A more complete description of this equipment is contained in a separate report enclosed with this Newsletter.

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Many new equipment developments were displayed in the Exposition Hall of the Conrad Hilton Hotel in Chicago April 15-20.

A report by the NAEB Engineering Committee to be released soon will cover these in some detail. In addition to the video tape recorder, the following will be covered: newly developed low and medium power television transmitters, transistor audio amplifiers and consoles, new television lighting equipment using sealed beam type lamps, microwave equipment and automatic programming devices for AM and TV, vidicon camera and associated equipment, low cost kinescope equipment and lenticular film for color television recording.

To the writer, the past year has seen a marked improvement in picture quality as demonstrated on vidicon live camera equipment. Kay-Lab, Dage, Sarkes-Tarzian and new G.E. vidicon camera equipment were on display and the picture quality was uniformly good.

Another feature of the week in Chicago was the dedication of new live color equipment at WNBQ which began making all local live originations in color. Monochrome equipment will be removed and soon will be dispensed with entirely. This means that initially WNBQ will originate approximately five hours per day of local live color programs. In addition the station will carry as many of its film programs as possible in color as well as NBC offerings. It is expected that the station will originate a total of seven hours per day of color programs.

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As noted in the January 1956 Newsletter, Part 3 of the FCC's rules governing Radio Broadcast Services revised in November and effective January 2, 1956 has now been published and is on sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C. for \$1.50 per copy. Standards of Good Engineering Practice concerning Broadcast Stations are now included in Part 3. This publication contains all rules, regulations and technical standards for AM, FM and TV.

Engineering charts and graphs contained in Part 3 may also be purchased separately for \$1.00 per copy. This pamphlet is titled "FCC Broadcasting Engineering Charts."

A set of two maps on "Estimated Ground Conductivity in the U.S." (Figure M-3), is also available at \$3.50 per set.

If you wish a complete list of FCC publications, write the Superintendent of Documents, Government Printing Office, Washington 25, D. C. and ask for Adm. Bulletin No. 1, March 1956.

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On April 11, 1956, the FCC proposed rule making amending Sections 3.66 (AM), 3.274 (FM) and 3.572 (noncommercial educational FM) of the FCC Rules and Regulations to authorize the remote control operation of all standard and FM broadcast stations, including those authorized to operate with directional antenna systems or with powers in excess of 10 kilowatts. Present regulations permit remote operation, subject to certain conditions, only by standard non-directional and FM broadcast stations authorized to operate with powers not in excess of 10 kilowatts.

The NARTB has completed a very extensive survey of this problem. As a result it has accumulated a large volume of data which shows that remote control operation of any station including those with directional antennas is entirely possible and practical. In fact, the data shows that once the remote control operating and transmitting equipment is properly adjusted, there are fewer outages with remote operation than when an operator is in attendance. As far as directional antennas are concerned, consulting engineers participating on a panel discussion of this problem at the recent NARTB Broadcast Engineering Conference stated that once properly designed and properly adjusted, these directional arrays are one of the most stable elements of the transmission system. They recommended that once adjusted, the tuning houses should be locked and remain locked and stated that a weekly check was sufficient to assure maintenance of the proper pattern.

Comments on this proposal, Docket No. 11677 should be filed with the Commission on or before June 1, 1956.

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Note for kinescope recorder operators. Jack Chenoweth of KETC recommends the use of the following equipment as a means of obtaining matched camera shots for kinescope recording. He states that KETC uses a Weston Photronic Model 594 RR photocell in conjunction with a Simpson Model 29 DC microammeter with a 0-50 microampere scale.

Their method is to mount the photocell within the hood of their video recorder to measure the illumination from the picture tube. The cameras in use should be focused on the same scene with the same focal length lens and at the same distance from the scene. The same peak to peak video voltage and pedestal levels should be set. By switching between cameras, any difference in gray scale will show up in the reading of the microammeter. By adjustment of beam, target, and perhaps lens stops, it is possible

to obtain almost identical photocell readings. He recommends adjustment of cameras to within one microampere reading on the meter for best results.

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We recently received a new and very complete catalog from the Gates Radio Company of Quincy, Illinois. It contains their complete line of radio and television broadcasting equipment. Many of our readers have received this catalog; if you have not, we'd suggest that you write directly to Gates requesting a copy.

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George Murphy, Chief Engineer of the Auburn Polytechnic Institute TV studio has compiled a very complete report of the equipment, material and procedures they employ for making 2 x 2 slides for use on a television film camera. We had in mind reproducing it in the Engineering Newsletter; however it consists of eight single-spaced typewritten pages plus four pages of data and drawings. If there are a number of requests for this information, we shall be happy to duplicate it for you or to make arrangements for George to supply it to you.

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We also have plans for a mock camera, including complete details for its construction which were prepared by Robert Schlorff, Chief Engineer at Wayne University. This camera can be constructed at a cost of \$50.00 for materials and is nearly as effective for certain initial training purposes as a \$16,000 image orthicon camera. Students learn all operating techniques and student directors can check the pictures each cameraman obtains as well as experiment in shot plotting.

Plans for this camera are available, and further information may be obtained from George Steiner, Supervisor of Undergraduate Instruction, Department of Speech, Wayne University, Detroit 1, Michigan.

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Swap Shop

WANTED: A used two-bay FM antenna for a 10-watt station on 89.1 mc. or a single circular one-bay antenna which can be used with a GE type BY-21A single-bay antenna to give added gain. Contact George D. Goodrich, KMWJ-FM, University of Wichita, Wichita, Kansas.

WANTED: Used 10-50 watt transmitter in good condition. Contact Jim Slack, Director, Radio Station KUSD, University of South Dakota, Vermillion, South Dakota.

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Engineering Seminar Approved

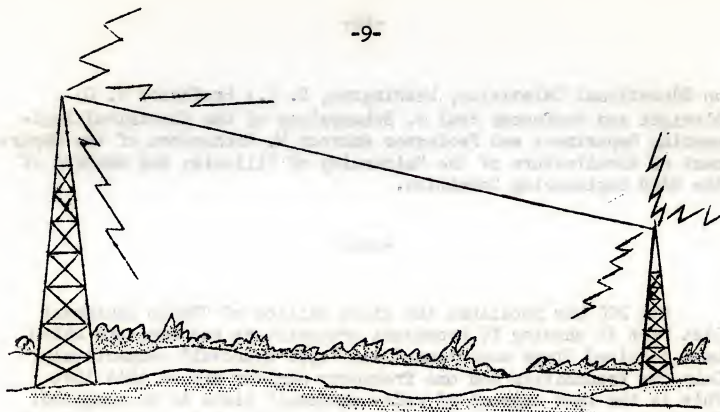
The NAEB Board of Directors has allocated W. K. Kellogg Foundation funds to hold a Radio and Audio Engineering Seminar at Allerton House, Monticello, Illinois, May 27 to June 1, 1956. Announcements of this seminar were mailed to all NAEB Active Members and to those listed in the NAEB Technical Directory on April 17. Due to the short interval between date the seminar begins and Board approval, immediate action was essential on applications with a closing deadline set for May 2, 1956. Successful applicants will be notified by May 15, 1956.

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AT PRESS TIME

Mrs. Bernice Setzer, staff member of KDPS, Des Moines Public Schools, was recently honored by the Iowa chapter of the American Institute of Architects. For the past two years Mrs. Setzer has done a weekly program which has covered many phases of architecture from historical forms to contemporary design. Architects have been invited to participate in panel discussions for some of these programs. Because of the service that this program has rendered the profession of Architecture, Mrs. Setzer has been admitted into the chapter as an Honorary Associate.

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TV Technical Tips No. 21

by

Cecil S. Bidlack, NAEB TV Engineer

By the time this Newsletter reaches you the First Radio and Audio Engineering Seminar will have been concluded and those attending will have returned to their homes. Thirty-one engineers are the recipients of the grants to attend this Seminar. Their names are listed elsewhere in this Newsletter.

Program arrangements are complete. Topics include maintenance and test procedures with special emphasis upon magnetic tape recording and with particular attention given to mass duplication of tape recordings. Many educational stations to be represented duplicate tapes for distribution within the confines of their own states as well as broadcasting the offerings of the NAEB Radio Network. In addition to mass duplicating methods, AM and FM transmitting and studio broadcasting equipment, magnetic recording equipment, space and building requirements for broadcasting, antennas, transmission systems, microwave and test equipment will be covered.

Highlighting the five-day program will be talks and demonstrations by representatives of broadcasting equipment manufacturers and allied fields. Speakers on the program will include Mr. C. J. Le Bel, Vice President of Audio Devices, Inc. of New York City; Mr. John Leslie, Chief Engineer, Audio Division, Ampex Corporation, Redwood City, California; Mr. V. A. Mohrlant, Technical Services Division, Minnesota Mining and Manufacturing Company, St. Paul, Minnesota; Mr. Cyril M. Braum, Engineering Consultant, Joint Council

on Educational Television, Washington, D. C.; Professor W. G. Albright and Professor Paul F. Schwarzlose of the Electrical Engineering Department and Professor Ambrose M. Richardson of the Department of Architecture of the University of Illinois; and members of the NAEB Engineering Committee.

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The FCC has published the first edition of "Radio Equipment List Part A" showing TV broadcast transmitters and monitors which have received "type acceptance" and "type approval" respectively. Only one transmitter and one frequency monitor are on this list. This is the last segment of radio equipment lists to be compiled. The lists are broken down into the following parts: Part A, Television Broadcasting Equipment; Part B, Aural (AM and FM) Broadcast Equipment; and Part C, List of Equipment Acceptable for Licensing in the Radio Services other than Broadcast.

Supplements to these lists will be issued from time to time and the lists will be brought up to date at about yearly intervals. These lists are not available for general distribution; however, copies are available for inspection at the Commission's offices in Washington and at each of its field offices. Arrangements may be made through the Technical Research Division of the Office of Chief Engineer of the FCC for the loan of copies of these lists so that those interested may reproduce the lists in whole or in part.

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RCA recently demonstrated a new, low-light, image orthicon camera tube which can "see" in almost total darkness. In the demonstration a camera equipped with this new wide-spaced image orthicon picked up the image of a girl in a room with the lights off. She was invisible to observers fifteen feet away in the same room. Observers stated that the picture obtained was shown on a television receiver in the room with good brightness and definition.

This new image orthicon is said to be 5 to 10 times more sensitive than present camera pick-up tubes. It is being used

experimentally by the military services and will be made available commercially. It is interchangeable with present camera tubes.

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The Society of Motion Picture and Television Engineers held its 79th Semi-Annual Convention in New York City April 30 - May 4. Seventy-seven papers were listed on the convention program. Of this number thirty-four were devoted to television and twenty-one of these were on television lighting and related subjects.

From this you can see that much emphasis was placed on television. Since the SMPTE was established by motion picture engineers, the meetings of the Society provides a place for motion picture and TV people to get together to exchange ideas, problems and solutions on a professional level.

If you wish a copy of Television Bibliography, a list of articles on television which have appeared in the SMPTE JOURNAL, address your request to the JOURNAL, 55 W. 42nd Street, New York, New York.

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Robert C. Higgy, Director of WOSU, has sent us copies of a paper describing the WOSU-TV Studio Radio-Intercom which they are using in their new studios. This equipment permits floor personnel complete freedom of movement within the studios while providing excellent one-way communication from the production director or other personnel on the camera control room wire intercom. Write us if you're interested in complete details of this radio intercom.

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George Murphy, Chief Engineer of the Auburn Alabama Educational TV Studio writes that they have recently purchased an

Auricon Super 1200 Camera with a TVT shutter. He wants to try it for kine work and would like to have the benefit of others' experience in this field. He wants to know what type of monitor might produce the best results and whether a P-4 or a P-11 phosphor is best for this purpose.

If you've had some kine experience using an Auricon, drop him a line and send us a copy.

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#### Swap Shop

James C. William, Chief TV Engineer for the Milwaukee Vocational and Adult Schools wants to buy a used 2 x 2 automatic slide projector for use with an ike chain. If you have one available, write to him at 1015 North Sixth Street, Milwaukee 3, Wisconsin.

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#### WKAR-TV's OLYMPIC TELETHON

WKAR-TV's (Michigan State University) telethon to raise money for the Olympic Fund, as reported in the May Newsletter, proved highly successful.

The telethon was the first ever sponsored by students, and other than the Bob Hope-Bing Crosby national telethon in 1952, was the only show produced specifically to raise Olympic Funds.

More than \$10,000 was collected from TV viewers phoning in pledges, campus and community solicitations, and gate receipts for the show.

Staged in the University's Ice Arena, the telethon was originated over the facilities of WKAR-TV. The arena was divided into an eight set area, requiring all of WKAR-TV's lighting and technical facilities. Fifty-six staff members and TV students contributed more than 1,600 man-hours over and above the work required for regular programming. Technical preparation for the show took two weeks.

In addition to television workers, hundreds of students, faculty members and townspeople pitched in.

Winners of 1956 Radio and Audio-Engineering Seminar Grants

1. Ammons, Furman M. - Transmitter Engineer, Radio Station WUNC-FM, University of North Carolina, Chapel Hill, N.C.
2. Andreasen, Howard - Chief Engineer, Radio Station KDPS-FM, Des Moines Public Schools, 629 Third Street, Des Moines, Iowa.
3. Boyd, Joseph C. - WWHI Engineer, Wilson Junior High School, School City of Muncie, Muncie, Indiana.
4. Brask, Thomas B. - Radio Station KUOM, University of Minnesota, Minneapolis, Minn.
5. Coston, Dean W. - Senior Studio Engineer, Broadcasting Service, Radio Station WUOM, University of Michigan, Ann Arbor, Michigan.
6. Deal, Clarence D. - Chief Engineer, Radio Station KOKH-FM, Oklahoma City Public Schools, Oklahoma City 6, Oklahoma.
7. Di Franco, Joseph - Assistant Engineer, Radio Station WBEZ, 228 North La Salle Street, Chicago 1, Illinois.
8. East, Larry - Chief Engineer, Radio Station KMWU, University of Wichita, Wichita, Kansas.
9. Ebert, S. J. - Technical Supervisor, Stations WSUI-KSUI, State University of Iowa, Iowa City, Iowa.
10. Eittreim, Oliver M. - Chief Engineer, Radio Station KWLC, Luther College, Decorah, Iowa.
11. Friedman, Herbert - Senior Radio Operator, Radio Station WNYE, Board of Education, 29 Fort Greene Place, Brooklyn 17, New York.
12. Goldsmith, Erwin - Chief Engineer, Radio Station KPFA, 2207 Shattuck Avenue, Berkeley 4, California.
13. Hansen, Burrell F. - Director, Radio Station KVSC, Utah State Agricultural College, Box 150, Logan, Utah.
14. Hicks, Virgil C. - Assistant Professor of Radio & Television, Radio Station KVOF-FM, Texas Western College, El Paso, Texas.
15. Hill, Claude H. - Chief Engineer, Radio Station KWGS-FM, University of Tulsa, Tulsa 4, Oklahoma.
16. Holbert, Bernard P. - Chief Engineer, Radio Station KSAC, Kansas State College, Manhattan, Kansas.

17. Martin, Thomas H. - Radio Station WBOE, Board of Education, Cleveland, Ohio.
18. Maxson, W. B. - Chief Engineer, Radio Station KANW, Albuquerque High School, Albuquerque, New Mexico.
19. Mayfield, Gerry - Chief Recording and Duplicating Engineer, Radio Station KAMC-FM, Oklahoma A. and M. College, Stillwater, Oklahoma.
20. Mock, Lester G. - Radio Station KOAC, Corvallis, Oregon.
21. Parks, William H. - Chief Radio Operator, Radio Station WOSU, The Ohio State University, Columbus 10, Ohio.
22. Prusha, James E. - Chief Engineer, Radio Station KUSD, University of South Dakota, Vermillion, South Dakota.
23. Ragsdale, W. E. - Chief Engineer, WFSU-FM, Florida State University, Tallahassee, Florida.
24. Reifel, William A. - Radio Operating Engineer, Radio Station WSHS, Sewanhaka High School, Floral Park, New York.
25. Rolfe, L. James - Technical Supervisor, Radio Station WFIU, Indiana University, Bloomington, Indiana.
26. Shonebarger, Bernard R. - Chief Engineer, Radio Station WTDS-FM, Toledo Public Schools, 1901 West Central Avenue, Toledo 6, Ohio.
27. Siemers, Herman H. - Chief Engineer, Radio Station WIAN, Shortridge High School, Indianapolis 7, Indiana.
28. Van Annan, Robert S. - Assistant Engineer, Radio Station WBUR, Boston University, 84 Exeter Street, Boston 16, Massachusetts.
29. Vogel, E. H. - Chief Engineer, Radio Station KSLH, 1517 S. Theresa Avenue, St. Louis 4, Missouri.
30. Welch, T. E. - Chief Engineer, Stations WNAD and WNAD-FM, The University of Oklahoma, Norman, Oklahoma.
31. Parker, Charles H. - Manager and Chief Engineer, Radio Station KSDS, San Diego City Schools, 12th and Russ Streets, San Diego 2, California.

Scanned from the National Association of Educational Broadcasters Records  
at the Wisconsin Historical Society as part of  
"Unlocking the Airwaves: Revitalizing an Early Public and Educational Radio Collection."



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